IN THE CLAIMS

The following copy of the unamended claims is provided for the convenience of the Examiner.

What is claimed is:

1-36. (Cancelled.)

37. (Previously Presented) A filler made in accordance with a method comprising:

drying a sol comprising amorphous silica nanoparticles having diameters of about 1 to about 50 nanometers, wherein the individual nanoparticles are in the form of chains having lengths of about 5 to about 400 nanometers, at a temperature and for a time effective to remove liquid therefrom; and

heating the dried silica sol to a temperature at about or above about 800°C and for a time effective to form at least one crystalline phase therein.

38. (Previously Presented) The filler of claim 37 wherein the heated dried silica sol has at least one crystalline phase that retains nanostructured character.

39. (Previously Presented) The filler of claim 37, wherein the chains have lengths of about 5 to about 300 nanometers.

40. (Cancelled)

41. (Previously Presented) The filler of claim 37, wherein the silica nanoparticles have diameters of about 1 to about 30 nanometers.

42. (Previously Presented) The filler of claim 37, wherein the silica nanoparticles have diameters of about 1 to about 20 nanometers.

43. (Previously Presented) The filler of claim 37, wherein the method further comprises surface treating the heated dried silica sol with a silane.

44. (Previously Presented) The filler of claim 43, wherein the silane comprises gamma-mercaptopropyltrimethoxysilane, gamma-mercaptopropyltriethoxysilane, gamma-aminopropyltriethoxysilane, or mixtures thereof.

45. (Previously Presented) The filler of claim 44, further comprising a microparticulate glass filler, a ceramic filler, or a mixture thereof.

46. (Previously Presented) The filler of claim 37, further comprising an opacifying oxide.

47. (Previously Presented) The filler of claim 37, wherein an X-ray diffraction pattern of material formed after the drying shows a dominant amorphous curve and no crystalline peaks, and an X-ray diffraction pattern of material formed after the heating exhibits crystalline peaks.

48. (Previously Presented) The filler of claim 37, wherein the sol that is dried comprises amorphous elongated silica nanoparticles in an aqueous solution.

49. (Previously Presented) The filler of claim 37, wherein, prior to said drying and heating, the sol comprising silica nanoparticles is mixed with a microparticulate filler.

50. (Previously Presented) The filler of claim 37, wherein, prior to said drying and heating, the sol comprising the silica nanoparticles is mixed with a microparticulate filler and an opacifying oxide or calcinable precursor thereof.

51. (Previously Presented) A filler made in accordance with a method comprising:

drying a sol comprising amorphous elongated silica nanoparticles at a temperature and for a time effective to remove liquid therefrom, wherein the silica nanoparticles comprise colloidal particles bound to each other in the form of chains having lengths of about 5 to about 400 nanometers; and

heating the dried silica sol to a temperature of about or above about 800°C for a time effective to form at least one crystalline phase therein, as shown by the presence, after heating, of crystalline peaks measured by X-ray diffraction, compared to the absence of crystalline peaks and the presence of a dominant amorphous peak before heating.

52. (Previously Presented) A filler made in accordance with a method comprising:

mixing a sol comprising amorphous elongated silica nanoparticles, which have diameters of about 1 to about 50 nanometers and are comprised of colloidal particles bound to each other in the form of chains having lengths of about 5 to about 400 nanometers, with a microparticulate filler having a particle size of 0.1 to 1 micrometer;

drying the mixture at a temperature and for a time effective to remove liquid therefrom; and

heating the dried mixture to a temperature at about or above about 800°C for a time effective to form at least one crystalline phase in the elongated silica nanoparticles.

53. (Previously Presented) The filler of claim 52, wherein the microparticulate filler is glass or ceramic.

54. (Previously Presented) The filler of claim 52, wherein the microparticulate filler is selected from the group consisting of silica, silicate glass, quartz, barium oxide, barium silicate, strontium silicate, barium borosilicate, strontium borosilicate, borosilicate, lithium silicate, lithium alumina silicate, zinc oxide, calcium oxide, tantalum dioxide, amorphous silica, ammoniated or deammoniated calcium phosphate and alumina, zirconia, tin oxide, titania, and mixtures thereof.

55. (Previously Presented) The filler of claim 53, wherein the heating is sufficient to form a material in which nanoparticulate silica is fused onto the microparticulate glass or ceramic surfaces.

56. (Previously Presented) The filler of claim 52, wherein the sol comprising silica nanoparticles and microparticulate filler are mixed by (i) preparing an aqueous or organic solution of dispersed microparticulate glass or ceramic filler under acidic or neutral conditions, and (ii) adding the sol comprising silica nanoparticles to form a gel.

57. (Previously Presented) The filler of claim 52, wherein the filler obtained in accordance with the method is a hybrid filler comprising about 40 to about 90 percent by weight of material derived from the sol of silica nanoparticles and about 1 to 20 percent by weight of the microparticulate filler.

58. (Previously Presented) The filler of claim 52, further comprising an opacifying metal oxide or calcinable precursor thereof.

59. (Previously Presented) The filler of claim 58, wherein the opacifying metal oxide is selected from the group consisting of zirconia, zirconia acetate, bismuth acetate, bismuth oxychloride, and combinations thereof.

60. (Previously Presented) The filler of claim 52, wherein, after heating the dried mixture, the dried and heated mixture is subjected to pulverization or milling to break agglomerates.

61. (Previously Presented) The filler of claim 60, wherein, after pulverization or milling, the particles are subjected to surface silane treatment.

62. (Previously Presented) The filler of claim 52, wherein the microparticulate filler is barium borosilicate glass filler.

63. (Previously Presented) A composition comprising the filler of claim 37 in admixture with a resin material to form a dental composite.

64. (Previously Presented) A composition comprising the filler of claim 52 in admixture with a resin material to form a dental composite.